

WHAT IS CLAIMED IS:

1. A method of increasing compressive strength of a zeolite/activator composition comprising:
blending
a zeolite having a mean particle size less than or equal to 100 microns,
an activator in an amount of greater than or equal to 5% and less than or equal to 50% by weight of zeolite/activator composition,
an organic acid or salt thereof in an amount of greater than or equal to 0.1% and less than or equal to 5.0% by weight of zeolite, and
a carrier fluid to form a blended composition; and
allowing the blended composition to set to form a set composition,
wherein the set composition has a greater saturated compressive strength than that of a set zeolite/activator composition lacking the organic acid or salt thereof.
2. The method of Claim 1 wherein the zeolite is represented by the formula:
$$M_{a/n}[(AlO_2)_a(SiO_2)_b] \cdot xH_2O$$

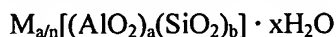
where
M represents one or more cations selected from the group consisting of Na, K, Mg, Ca, Sr, Li, Ba, NH₄, CH₃NH₃, (CH₃)₃NH, (CH₃)₄N, Ga, Ge and P;
n represents the cation valence;
b:a ratio is in a range from greater than or equal to 1 and less than or equal to 5; and
x represents number of moles of water entrained into the zeolite framework.
3. The method of Claim 1 wherein the zeolite comprises analcime, bikitaite, brewsterite, chabazite, clinoptilolite, faujasite, harmotome, heulandite, laumontite, mesolite, natrolite, paulingite, phillipsite, scolecite, stellerite, stilbite, or thomsonite.
4. The method of Claim 1 wherein the zeolite comprises chabazite.
5. The method of Claim 1 wherein the activator comprises calcium hydroxide, sodium silicate, sodium fluoride, sodium silicofluoride, magnesium silicofluoride, zinc silicofluoride, sodium carbonate, potassium carbonate, sodium hydroxide, potassium hydroxide, sodium sulfate, or mixtures thereof.

6. The method of Claim 1 wherein the carrier fluid comprises a water-based carrier fluid in an amount of from about 100 to about 200 percent by weight of the zeolite.
7. The method of Claim 1 wherein the organic acid or salt thereof comprises acetic acid, an organic carboxylic acid having an α -hydroxy group, or a combination thereof.
8. The method of Claim 7 wherein the organic carboxylic acid having an α -hydroxy group comprises citric acid, tartaric acid, or gluconic acid.
9. The method of Claim 1 wherein the zeolite has a mean particle size of greater than or equal to 1.0 micron and less than or equal to 10 microns.
10. The method of Claim 9 wherein the activator is present in an amount of greater than or equal to 20% and less than or equal to 30% by weight of zeolite/activator composition.
11. The method of Claim 9 wherein the activator is present in an amount of 26% by weight of zeolite/activator composition.
12. The method of Claim 1 wherein the organic acid or salt thereof is present in an amount of greater than or equal to 0.5% and less than or equal to 1.0% by weight of zeolite.
13. The method of Claim 12 wherein the organic acid or salt thereof is citric acid.

14. A method of performing drilling operations comprising:
penetrating a subterranean zone with a wellbore;
introducing a wellbore treating fluid into the well bore, the fluid comprising a blended composition comprising:
a zeolite having a mean particle size less than or equal to 100 microns,
an activator in an amount of greater than or equal to 5% and less than or equal to 50% by weight of zeolite/activator composition,
an organic acid or salt thereof in an amount of greater than or equal to 0.1% and less than or equal to 5.0% by weight of zeolite, and
a carrier fluid; and
introducing a subsequent composition into the wellbore to displace all but a remaining portion of the wellbore treating fluid from the wellbore.
15. The method of claim 14 further comprising:
allowing the remaining portion of the wellbore treating fluid to set to form a set,
wherein the set has a greater saturated compressive strength than that of a set zeolite/activator composition lacking the organic acid or salt thereof.
16. The method of claim 14 wherein the remaining portion of the wellbore treating fluid is in one or more of a filter cake, fissure, fracture, cavern, vug, thief zone, low pressure subterranean zone, and high pressure subterranean zone in the wellbore.
17. The method of claim 16 further comprising:
allowing the remaining portion of the wellbore treating fluid to set to form a set, wherein the set seals one or more of a fissure, fracture, cavern, vug, thief zone, low pressure subterranean zone, and high pressure subterranean zone in the wellbore.
18. The method of claim 14 wherein the penetrating of the subterranean zone with a wellbore comprises drilling the wellbore with a mud, and wherein the introducing of the wellbore treating fluid at least partially displaces the mud from the wellbore.

19. The method of claim 14 wherein the activator comprises calcium hydroxide, sodium silicate, sodium fluoride, sodium silicofluoride, magnesium silicofluoride, zinc silicofluoride, sodium carbonate, potassium carbonate, sodium hydroxide, potassium hydroxide, sodium sulfate, or mixtures thereof.

20. The method of claim 14 wherein the zeolite is represented by the formula:



where

M represents one or more cations selected from the group consisting of Na, K, Mg, Ca, Sr, Li,

Ba, NH₄, CH₃NH₃, (CH₃)₃NH, (CH₃)₄N, Ga, Ge and P;

n represents the cation valence;

b:a ratio is in a range from greater than or equal to 1 and less than or equal to 5; and

x represents number of moles of water entrained into the zeolite framework.

21. The method of claim 14, wherein the zeolite comprises analcime, bikitaite, brewsterite, chabazite, clinoptilolite, faujasite, harmotome, heulandite, laumontite, mesolite, natrolite, paulingite, phillipsite, scolecite, stellerite, stilbite, or thomsonite.

22. The method of claim 14 wherein the carrier fluid comprises a water-based carrier fluid in an amount of from about 100 to about 200 percent by weight of the zeolite.

23. The method of claim 14 wherein the carrier fluid comprises water or water-based gels.

24. The method of claim 14 wherein the carrier fluid comprises fresh water, unsaturated salt solution, brine, seawater, or saturated salt solution.

25. The method of claim 14 wherein the carrier fluid comprises canola oil, kerosene, diesel oil, fish oil, mineral oil, sunflower oil, corn oil, soy oil, olive oil, cottonseed oil, peanut oil or paraffin.

26. A method of performing drilling operations comprising:
penetrating a subterranean zone with a wellbore;
introducing a wellbore treating fluid into the wellbore, the fluid comprising a blended composition comprising zeolite having a mean particle size less than or equal to 100 microns, an organic acid or salt thereof in an amount of greater than or equal to 0.1% and less than or equal to 5.0% by weight of zeolite, and a carrier fluid;
introducing a subsequent composition into the wellbore, the subsequent composition comprising an activator in an amount of greater than or equal to 5% and less than or equal to 50% by weight of the zeolite/activator composition, to displace all but a remaining portion of the wellbore treating fluid from the wellbore; and
contacting the blended composition in the remaining portion of the wellbore treating fluid with the subsequent composition to form a set composition.
27. The method of Claim 26 wherein the remaining portion of the wellbore treating fluid is in one or more of a filter cake, fissure, fracture, cavern, vug, thief zone, low pressure subterranean zone, and high pressure subterranean zone in the wellbore.
28. The method of Claim 26 wherein the penetrating of the subterranean zone with a wellbore comprises drilling the wellbore with a mud, and wherein the introducing of the wellbore treating fluid at least partially displaces the mud from the wellbore.
29. The method of Claim 26 wherein the subsequent composition comprises a drilling fluid.
30. The method of Claim 29 further comprising placing a cement slurry in the wellbore after the introducing of the drilling fluid.
31. The method of Claim 26 wherein the introducing of the subsequent composition into the wellbore comprises:
introducing a cement slurry comprising an activator in an amount of greater than or equal to 5% and less than or equal to 50% by weight of the zeolite/activator composition; and
allowing the activator to diffuse into contact with the blended composition in the remaining portion of the wellbore treating fluid.

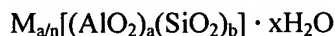
32. The method of Claim 26 wherein the introducing of the subsequent composition into the wellbore comprises:

introducing at least one of a mud, a spotting fluid, a pill and a cement slurry comprising an activator in an amount of greater than or equal to 5% and less than or equal to 50% by weight of the zeolite/activator composition.

33. A blended composition comprising:

a zeolite having a mean particle size less than or equal to 100 microns,
an activator in an amount of greater than or equal to 5% and less than or equal to 50% by weight of zeolite/activator composition,
an organic acid or salt thereof in an amount of greater than or equal to 0.1% and less than or equal to 5.0% by weight of zeolite, and
a carrier fluid.

34. The composition of Claim 33 wherein the zeolite is represented by the formula:



where

M represents one or more cations selected from the group consisting of Na, K, Mg, Ca, Sr, Li,

Ba, NH₄, CH₃NH₃, (CH₃)₃NH, (CH₃)₄N, Ga, Ge and P;

n represents the cation valence;

b:a ratio is in a range from greater than or equal to 1 and less than or equal to 5; and

x represents number of moles of water entrained into the zeolite framework.

35. The composition of Claim 33 wherein the zeolite comprises analcime, bikitaite, brewsterite, chabazite, clinoptilolite, faujasite, harmotome, heulandite, laumontite, mesolite, natrolite, paulingite, phillipsite, scolecite, stellerite, stilbite, or thomsonite.

36. The composition of Claim 33 wherein the zeolite comprises chabazite.

37. The composition of Claim 33 wherein the activator comprises calcium hydroxide, sodium silicate, sodium fluoride, sodium silicofluoride, magnesium silicofluoride, zinc silicofluoride, sodium carbonate, potassium carbonate, sodium hydroxide, potassium hydroxide, sodium sulfate, or mixtures thereof.

38. The composition of Claim 33 wherein the carrier fluid comprises a water-based carrier fluid in an amount of from about 100 to about 200 percent by weight of the zeolite.
39. The composition of Claim 33 wherein the organic acid or salt thereof comprises acetic acid, an organic carboxylic acid having an α -hydroxy group, or a combination thereof.
40. The composition of Claim 39 wherein the organic carboxylic acid having an α -hydroxy group comprises citric acid, tartaric acid, or gluconic acid.
41. The composition of Claim 33 wherein the zeolite has a mean particle size of greater than or equal to 1.0 micron and less than or equal to 10 microns.
42. The composition of Claim 33 wherein the activator is present in an amount of greater than or equal to 20% and less than or equal to 30% by weight of zeolite/activator composition.
43. The composition of Claim 42 wherein the activator is present in an amount of 26% by weight of zeolite/activator composition.
44. The composition of Claim 33 wherein the organic acid or salt thereof is present in an amount of greater than or equal to 0.5% and less than or equal to 1.0% by weight of zeolite.
45. The composition of Claim 33 wherein the organic acid or salt thereof is citric acid.
46. A composition comprising:
chabazite having a mean particle size of greater than or equal to 1.0 micron and less than or equal to 10 microns,
calcium hydroxide in an amount of greater than or equal to 5% and less than or equal to 50% by weight of chabazite/calcium hydroxide composition,
citric acid or salt thereof in an amount of 0.8% by weight of chabazite, and
water.